HISTORIC STRUCTURE REPORT
ARCHITECTURAL DATA SECTION
FORT MOULTRIE

FORT SUMTER NATIONAL MONUMENT

CHARLESTON
SOUTH CAROLINA

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I. ADMINISTRATIVE DATA

A. Identification and Proposed Treatment

Fort Moultrie, historic structure number ____, Fort Sumter National Monument, Sullivan's Island, Charleston, South Carolina, is classified as a structure of "First Order of Significance." It is proposed that the Fort will be preserved, restored, and reconstructed in its various parts, including partial furnishing and armament, to selected appropriate phases of its history as it existed during its period of maximum development, 1808 - 1945.

B. Proposed Use of Structure

Fort Moultrie shall constitute a major exhibit-in-place of the evolution of 200 years of American Coastal fortifications, erected for the defense of important harbors of the United States. Fort Moultrie is the only fort owned by the Service which encompasses within its walls, or contiguous thereto, defensive fortification elements representative of the major historic periods of this two-century era.

C. Justification for Proposed Use

The Congressional Joint Resolution to establish the Fort Sumter National Monument was approved April 28, 1948 (62 Stat. 204). In the language of the Resolution the Secretary of the Interior was authorized to accept title "to the site of the historic structure known as Fort Sumter...together with such buildings and other improvements as are appurrenant to such site."

Deed reconveyances to the Federal Government of some of the Fort

Moultrie lands during the 1960-1967 period carry the following general statement:

> Whereas the party of the second part [U. S. Government] proposes to utilize a portion of the above described property for National Monument and National Historic Site purposes by making certain improvements and developing facilities for the use and benefit of the people of the United States in accordance with the provisions of the National Monument Act, June 8, 1906 (34 Stat. 225) and the National Historic Sites Act, August 21, 1935 (49 Stat. 666)...

The Interpretive Prospectus, Fort Sumter, approved June 12, 1973 calls for the development of the historic resource in accordance with Sections A and B above.

III HISTORICAL DATA SECTION

The Historical Data Section has been prepared by Mr. Edwin C. Bearss and been published in a separate volumn dated December 30, 1968, titled:

FORT MOULTRIE, NO. 3
Fort Sumter National Monument
Historic Structure Report
Historical Data Section

This work is a definitive study and has served as the basic source for the documentation of this report.

III ARCHEOLOGICAL DATA SECTION

An archeology contract has been signed with the Institute of Archeology and Anthropology, University of South Carolina, to determine the location of Fort Moultrie I (1776-1783) as well as to uncover remains of Fort Moultrie II (1798-1804) and selected features of Fort Moultrie III (1808-1945)

This work is scheduled for October 15 - November 16, 1973 with a preliminary draft report due by the first of the year and final report by next summer.

IV. ARCHITECTURAL DATA SECTION

A. Summary of Documentary Data

Original drawings made during the historic periods of active use of Fort Moultrie (1808-1945) are deposited with the National Archives at Washington, D. C. (what RG) As are numerous reports, letters and various correspondence narrating conditions, problems, proposals and changes during the active life of the Fort, narrative records for the period subsequent to 1868 are on file at the East Point Record Center, East Point (Atlanta), Georgia. Photostatic and Xerox copies of the significant drawings and narratives are also on file at Fort Sumter National Monument.

Although study has indicated that the drawings are not infallible and the narrative records are often missing or silent on specific subjects, the combined body of data, properly interpreted, yields an accurate account of the physical evolution of the fort.

The following archival drawings, found in the National Archives, have been selected as the most significant and informative with respect to the Fort and its internal changes:

1) "Plan of Fort Moultrie" prepared by Lt. Mansfield in 1830, Drawer 65, Sheets 6 and 8.

2) "Plans and Sections of Magazine at Fort Moultrie, 1839," Drawer 65, Sheet 12.

3) "Plan of Fort Moultrie, Charleston Harbor, S. C.," October 1840, Drawer 65, Sheet 14.

4) "Sketch of West End of Sullivan's Island, Charleston Harbor," 1865, Drawer 64, Sheet 75.

5) "Fort Moultrie, January 30, 1868," Drawer 65, Sheet 19.

6) "Fort Moultrie, as proposed by The Board of Engineers, 1871" Drawer 65, Sketch B.

7) "Fort Moultrie, S. C., Plan, Sections, and Elevations, Showing the original design for Reconstructing the Work, December 1871, with modifications since adopted, including the re-arrangement of B. H. Walls and Front Ends of Traverses in accordance with circular of May 7, 1874," dated January 18, 1877, Drawer 65, Sheet 25.

8) "Magazine in N. W. Corner of Fort Moultrie," 1877, Drawer 65, Sheet 31-2.

9) "Fort Moultrie, S. C.," showing Batteries Bingham and McCorkle," 1898, Drawer 65, Sheet 30-1.

10) "Emplacement for 4.7-inch Rapid Fire Guns on Pedestal Mounts at Fort Moultrie [Battery Bingham] Sullivan's Island, S. C.," 1901, Drawer 65, Sheet 33.

11) "Plan and sections of Proposed Emplacements for two 3"-15 pounder -- Rapid Fire Guns [Battery Lord] on pedestal mounts ...[Fort Moultrie,] S. C.," 1902, Drawer 64, Sheet 129.

12) "Fort Moultrie, S. C., Battery [Lord] of Two 3-inch Rapid Fire Guns," 1903, Drawer 64, Sheet 129-2.

13. "Proposed Changes at Old Mining Casemate to Render it Suitable for Occupancy," 1917, Drawer 65, Sheet 32-17.

B. Existing Conditions (See Appendix for photographs and drawings)

The present fort, including all of its components, is in good condition. The brick are hard-burned units and very few have noticeably deteriorated. The northeast angle of the southeast salient has separated from the wall and needs repair but there are no serious structural faults evident. (Photo 1)

Mortar joints on the respective north faces of the gorge and the northeast and northwest bastions are in poor condition. In many places the mortar has eroded to the point that face brick can be pried from the wall. Joints on the other walls are in fair to good condition. (Photo 2)

All of the underground magazines and galleries on the interior require cosmetic patching of concrete floors and stucco walls. (Photo 3) The exterior surfaces of these structures are concrete under earth cover and although there is some evidence of ground water leakage and faulting, they are in good condition.

The brick and granite aggregate concrete roofs of the Sally Port have suffered deterioration of the surfaces, leaving them rough and exposing the aggregate. (Photo 4) Wherever any of the other underground structures' roofs have been exposed to the weather through loss of the super-incumbent earth cover, the concrete surface has eroded and deteriorated. (Photo 5)

Leakage of surface water into the underground rooms and galleries through roof or wall surfaces, is not a serious problem at present. In several places, notably the exposed roofs of the East and West Bomb-

proofs, old asphaltic coatings are evident and it may be that such membranes are responsible for the present general lack of leakage.

The problem of leakage was serious in the Sally Port and its two flanking casemates until this last spring. At that time a water-proofing contract was carried out and the work, consisting of sealing the large cracks with polysulfide polymer sealant and applying Hydrozo to the exposed concrete surfaces, appears to have alleviated most of the problem.

Discoloration of the walls in the west bombproof indicates some water access but the seepage has not been of such magnitude as to spall the plaster.

Although the water table must be very shallow at this site, there are no observable signs of capillary rise (rising damp).

The most serious water problem is that of rain water access to the several service magazines. At times of hard rains the water rises as much as a foot or so in these underground rooms and must be pumped out by the park maintenance staff. The problem appears to be the result of later changes and additions to grade levels at the entrances to these structures, which in all cases are higher than called for on the original plans. (Photo 6)

Condensation does not appear to be a significant problem with the exception of the old Magazine in the northwest bastion. This did not seem to be a major problem in the structure's historic period and should

be alleviated by restoring the building with its lining.

Ironwork present in the overhead of the Anteroom of the old Magazine has exfoliated resulting in spalling of the concrete surfaces of beams and ceiling. (Photo 7)

Some exfoliation is present also in the steel beams and reinforcing at the entrance to the East Magazine of Battery McCorkle.

Of the three Spanish-American War batteries (Battery Bingham, Battery McCorkle and Battery Lord), Battery Bingham is in the best condition. All of the exposed steel and iron work is in very good condition, well painted and smooth surfaced, showing few signs of corrosive action. (Photo 8)

The concrete of this battery is in good condition. The surfaces are generally sound and smooth, broken by numerous but insignificant hairline cracks and a few instances of surface spalling. The concrete blast apron is in fair condition. There is evidence of subsidence and cracking and the entire surface has eroded, exposing the granite aggregate. (Photo 9)

The same surface erosion is evident in both the concrete emplacement and the blast apron of Battery McCorkle. The apron here, however, is in better structural condition with less faulting and subsidence than that of Battery Bingham. The emplacement is structurally sound. (Photo 10)

Battery Lord is in the worst condition. The concrete of the emplacement has numerous fissures on the horizontal surface, allowing water access which has opened the cold joints of the vertical surfaces of the north face. Here, water exiting through cracks has resulted in lime (calcium) formations on the wall surfaces. The blast apron is in fair condition with some surfaces spalling and subsidence evident. (Photo 11)

Other than the three Spanish-American War Batteries the only positions existing are numbers 1, 9, 10, 11 and 12, all erected in the 1872-1876 period.

Gun position 1 is the most complete and in the best condition although the timbers show evidence of serious decay. (Photo 12) Gun position 12 is in good condition but it consists only of the granite platform and steel pintle. The breast-height wall exists only as unstabilized foundation ruins. (Photo 13)

Gun positions 9, 10 and 11 are in fair to poor condition. 9 and 11 are buried and only traces above ground indicate their position. The timber and iron work of 10 is readily evident and is in fair condition although the timbers are decayed. (Photo 14)

The Harbor Defense Control Station is in excellent condition. (photo 15)

Over the years the sodded slopes of the numerous earth mounds protecting the underground structures have eroded somewhat, resulting in

a softening of the original contours. All are well-grassed, however, and stable at present. (Photo 16)

Doors and windows are in good condition. Several of the service magazine doors have begun to decay on the bottom and the exterior steel doors of the ground-level entrance of the Harbor Control Post have small holes caused by corrosion but in general they are in good condition.

Drainage of the area is poor, resulting in flooding of underground spaces as cited above and in standing water immediately in front of the north curtain wall (Gorge). Storm drains back up in times of abnormally high tides and cause flooding, principally in the Sally Port.

C. RESULTS OF PHYSICAL INVESTIGATION OF STRUCTURAL FABRIC

1808 Construction:

1. Enceinte

The only visible remains of the original enceinte of Fort Moultrie are the scarp walls. (The parapet or coverline walls, parade walls, counterforts and tie walls were removed in 1872.) Foundations of the walls, 7'6" wide, were erected on a double layer of plank which, over the years, has decayed and allowed differential settlement. This settlement has produced wall cracks over the years but repointing efforts dating back to the 1830's have held the damage to a minimum. At present bond separation is evident but in every case the soft lime mortar has allowed for the slight movement without damage to the brick units. (Photo 17)

The original mortar was composed of white lime with finely ground oyster shell aggregate. Because of the softness of this mortar, periodic repointing of the walls has been necessary. Mortar from 1860 to the present has been a cement mortar with sand aggregate.

Mortar joints are generally good with the exception of the north faces which require extensive re-packing of the joints and repointing. The scarp walls are otherwise in good condition.

2. Northwest Bastion Storage Magazine:

This structure, altered somewhat in 1876, is the only remaining vestige of the inner works of the 1808 construction. It is a brick structure laid up in lime-oyster shell mortar with a heavy barrel-vaulted roof.

There are no visible signs of cracks or other structural failures, nor of any water-related problems except for condensation which occurs at intermittent times. The magazine is presently unlined.

1872-1876 Construction:

The structures of this period consist of the Sally Port, East and West Bombproof, 5 service magazines, Principal Magazine, and inter-connecting galleries, and the gallery erected around the Northwest Bastion Storage Magazine.

All of these structures were built of low strength brick-aggregate concrete and in general are in good structural condition.

The only significant structural failures to be noted are the wing walls of Service Magazines 2 and 5 which have broken away because of foundation failure. (Photo 18)

The gallery surrounding the Northwest Bastion Storage Magazine was constructed by facing the old parade wall with brick-aggregate concrete and springing a brick vault across the old open passageway to the wall of the Magazine. Both the concrete wall-facing and the mortar of the brick vault are very low strength. The cement in both instances is very soft and can be easily chipped with a hand pick. The mortar of the vault separates cleanly from the brick surfaces, leaving them undamaged. (Photo 19)

1898-1903 Construction:

Structures erected during this period were Battery Bingham, Battery McCorkle and Battery Lord. These are all brick or granite-aggregate concrete structures and with the exception of Battery Lord, are in good structural condition. (Photo 20)

Battery Lord, apparently constructed with numerous horizontal cold joints, is now somewhat deteriorated. Water access over the years has opened these joints and deposited heavy lime encrustations on the wall surfaces.

1943 Construction:

The Portland cement Harbor Control Post structure is in excellent condition. There is no evidence of structural failure nor of water-related problems. (Photo 21)

D. DESCRIPTION OF APPEARANCE DURING HISTORIC PERIODS

1. Summary of Physical Changes:

Fort Moultrie has undergone extensive changes in its 165 year existence. Erected in 1808 as the successor to two previous forts at this site (Fort Moultrie I: 1776-1783 and Fort Moultrie II: (1798-1804). Fort Moultrie was considered "...little inferior to any work in the U. States in point of magnitum and importance..." (1) Little change occurred during its first two decades but by 1830, the Fort had deteriorated somewhat and repairs and improvements were made over the next several years.

Additional repairs and improvements were made in the period 1839-1846 and again in the period 1855-1860. what repairs?

The period of the Civil War (1860-1865) resulted in several permanent improvements to the fabric as well as significant changes due to the effect of bombardment.

In 1872 work was begun that materially altered the fort. At the conclusion of this period in 1876 the only remaining vestige of the 1808 construction was the exterior of the enceinte or scarp walls and the old Storage Magazine in the Northwest Bastion.

From 1876 until 1898 with the advent of the Spanish-American War the fort remained basically unchanged. Batteries Bingham, McCorkle and Lord were

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1. Bearss, Fort Moultrie, No. 3, pg. 22

erected between 1898 and 1903, eliminating some of the earlier 1872-1876 gun positions.

A final major change occurred in 1943 when the Harbor Control Station was built.

As it stands today, Fort Moultrie is a composite representing the physical evolution of a seacoast fortification through the significant military historical periods of the nineteenth and twentieth centuries.

2. 1808 - 1860 Period

Following the destruction of Fort Moultrie II by the devastating hurricane of September 1804 only ruins described as "heaps of rubbish" remained of the fortification. (2) Chief Engineer Jonathan Williams, who visited Sullivan's Island in April 1807 noted, however, that "...the barracks, in the rear and without the fort . . . might be put in good repair by restoring the interior wood part." (3) Williams went on to state that a new fort was to be erected at this site and that its front would occupy the ground immediately to the rear of the ruins of Moultrie II.(4)

Stimulated by the Leopard-Chesapeake affair in June 1807, Congress voted funds at the end of the year for new fortifications to protect important harbors. One of the new forts was to be Fort Moultrie III.(5)

2. Bearss, Fort Moultrie I and II
3. Ibid.
4. Ibid.
5. Bearss, Fort Moultrie No. 3

The plans for the new fort were apparently conceived by Captain Alexander Macomb. Williams had originally advocated a triple-tiered casemated work in his official report of April 23, 1807.(6) On May 14, 1807 Williams wrote to Macomb relating that he had authorized the Military Agent at Charleston to begin purchasing materials and that he hoped to forward plans and specifications for the first new Charleston work to be undertaken (Fort Pinckney) within a few days. The earliest extant plan for Fort Moultrie III, however, was drawn by Macomb in June 1807. Whether Williams had a hand in the design is not known but it appears that Macomb can be credited with the work.

The plan drawn by Macomb and dated "1808 June" served as the basis for the construction of Fort Moultrie.(7) Certain details do not seem to have been carried out, indicating that the plan was modified as construction progressed.

The plan prepared by Macomb was for an enclosed work of irregular outline defended by bastions and batteries; presenting a battery of three sides on the seafront. Within the walls on the parade were six buildings - three barracks, two officers' quarters, and a magazine.

A ditch averaging 30 feet wide and six feet deep encircled the fort and a water battery, with emplacements for seven guns, was drawn adjoining the ditch in front of the southwest corner of the south seafront. Outside the ditch at the Sally Port was shown the Public Canal which led north

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6. Ibid., pg. 11
7. See plate ___.

into the Cove.

There are two items of interest on this drawing. One is the plan relationship of the barracks buildings which conform to those dating back to Moultrie II. Based on Williams' statement in April 1807 projecting the reuse of the old barracks, one must presume that Macomb was thus indicating this concept on his plan of 1808. The other item of interest is the delineation of the Canal in hard, straight lines, thereby indicating that at this date it was a constructed feature rather than a natural channel.

Two later plans are more revealing regarding the state of construction of the fort. The first, drawn by Capt. Poussin in 1821, follows Macomb's plan in the general outline and siting of the Fort.[8] It differs in not indicating a surrounding ditch nor a water-battery. By comparison with the second later plan, (that by Lt. Mansfield dated 25 September 1830) it appears that Poussin's drawing is accurate in all details with the exception of the stylized rendering of the enceinte which does not depict the embrasures.[9] Poussin's drawing does give a detail missing on Macomb's plan of the sentry boxes located at the salient angles of the respective northeast, southeast, southwest and northwest bastions. These constructions show as narrow passageways or defiles corresponding to the capital of the respective bastions ending in circular enclosures at the extreme point of the salient. Mansfield's 1830 drawing shows the defiles but rather than terminating in circular sentry boxes he shows the passages

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8. See plate
9. See plate ____.

terminating in square ends which do not totally pierce the coping. Only a thorough investigation of the fabric by removal of brick and excavating would possibly tell us if the circular sentry boxes were part of the 1808 construction.

Poussin's drawing also gives us the correct plan of the barracks and officers' quarters as erected in 1808. Although Macomb's plan revealed that Williams' proposal to incorporate the old quarters of Moultrie II in the new work had been seriously contemplated, we know from Macomb's account that prior to the construction of Moultrie III he caused the old quarters to be razed and the materials salvaged.(10)

In addition to the circular sentry boxes and the omission of the embrasures, Poussin's plan differs from that of Mansfield's on only one other small matter, the slope of the coverline. Whereas Poussin shows this to be horizontal, Mansfield shows a slope to the exterior. Other than this detail Poussin's sections through the enceinte do not differ from Mansfield's.

Mansfield's 1830 drawing of Fort Moultrie was made in response to an order from the Engineer Department of August 30, 1830 requesting a report on the present state of the Fort which would serve as a guide to the thinking of the Board of Engineers who were contemplating "...the improvement of Fort Moultrie by additions to it or by building on the present

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10. Ibid., pg. 21

walls so as to render the fort secure from escalade..."(11)

Along with his drawing Mansfield also submitted a lengthy "Memoir, explanatory of the Plan, Profiles, Sections, etc. of Fort Moultrie and Remarks and Probable cost..."(12) In his Memoir, Mansfield noted that the settlement of the scarp walls due to the rotting of the plank foundation had resulted in a separation of the scarp walls from the respective tie walls and embrasure cheeks, but otherwise that the Fort was in relatively good condition.

His greatest concern was for the "preservation of the site." The sea, which had previously claimed Moultrie I and II, was again threatening Moultrie III.

Following study of Mansfield's Plan and Memoir the Board of Engineers determined not to make any major change to the Fort's physical configuration. Rather, the period between 1830 and 1860 saw only repair and minor improvements made to the Fort. Only four moderately significant changes were made during this time. Between 1830 and 1833, the 1808 embrasures of the land fronts appear to have been bricked in; in 1833 a line of pickets or "palisades 8 feet high..in advance of the three land fronts" was erected;(13) and in 1839 the 1808 wood ramps (which were rebuilt in 1833) to the seafront gun platforms and the Northeast Bastion were rebuilt in

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11. Ibid, pg. 69 and Mansfield's Memoir Sept. 25, 1830
12. Ibid - reproduced in Appendix
13. Bearss, Fort Moultrie No. 3, pp. 71, 74

brick.(14) The fourth change was the erection of two hot shot furnaces. By 1830 the furnace shown on Poussin's 1827 plan was no longer in evidence. A new furnace was built by Captain Bowman in the repairs of 1840, but by 1855 this one had disappeared.(15) Captain Cullum noted in his letter of March 31, 1855 to General Totten that "A shot furnace can be built upon the parade of the work upon the site of the former one, which has been torn down. I know not for what reason."(16) Cullum rebuilt the furnace, completing it in February 1856.(17)

The appearance of the scarp walls during this period is somewhat vague but it appears that they were painted ocher by 1829 (and possibly previous to that time); were stuccoed or heavily lime-washed in the 1830's and either ocher-washed or grey-washed during the remainder of the period. Traces of lime-oyster shell stucco can be found on all vertical surfaces pre-dating 1860. These traces are particularly evident in the frieze of the cordon. (Photo 22)

By 1830 it was reported that "...vegetation...had taken place in the joints, and...that most of the pointing had disappeared..." in the scarp wall.(18) (Photo 23)

The old Magazine, the only remaining structure within the walls of Fort Moultrie which dates to the original construction of 1808, was shown on both Macomb's 1808 plan and Poussin's 1827 plan. Mansfield's drawing

14. Ibid, pp. 74, 84
15. Ibid, pg. 85
16. Cullum to Totten, Mr. 31, 1855
17. Bearss, Fort Moultrie No. 3, pg. 92
18. Ibid, pg. 70

of 1830 renders the Magazine in some detail both in plan (scale 1" = 30') and in transverse section (scale 1" = 12'). Even more specific detail is rendered in Bowman's drawings of 1839 and 1840. (Plates____) Correspondence between Bowman and Totten further elucidates the appearance of the structure.[19]

The Magazine was a free standing brick structure, rectangular in plan (24 ft. X 37 ft.), with a barrel-vault roof, double sloped on the exterior, with gables. The interior was one open space (15 ft. X 28 ft.) with a door on the south and a window on the north. Typical through-the-wall baffled ventilators were provided, two on the east and two on the west wall.

Several references during the 1830's mention the composition of the roof as being "tile" over shingles. Although the "tile" is nowwhere defined, it is likely that the reference is to slate tile.

The transverse section on Mansfield's 1830 drawing shows the doorway to be rectangular in shape while Bowman's drawings of 1839 and 1840 show it to be a segmental arch. Investigation of the present fabric finds a red free-stone lintle over the north window opening and the fragments of one in the south doorway. (Photos 24-25) The doorway lintle was apparently removed between 1830 and 1840 and a segmental arch constructed. Tyis type of stone was subject to great deterioration due to the humidity in the Charleston area. Bowman, in writing to Totten, May 22, 1836 stated "...Red free-stone, I find will not withstand this climate---The soles of the embrasures in Castle Pinckney have lost nearly half an inch of their

19. See Appendix

thickness already by disintegration." (20) This phenomenon is manifested by the lintle of the north window in the old Storage Magazine at Fort Moultrie.

The plan, sections and elevations of the Magazine drawn by Bowman in 1840 along with his letter of June 19, 1839, provided more specific data on the construction of the work. The floor joists were 3 X 6's, two feet "apart" and rested on brick "pillars" elevated 15 inches. The north window was 3" 1-1/2" from the floor and had "...shutters inside and outside..." with "composition" fastenings. (21)

From the earliest mention of the Magazine in 1811 it was always said to be dry. All references in the 1830's state that it was unlined. It cannot be determined from available data whether there was an original wood lining or not.

In this regard in his report of March 10, 1835 to Gratiot, Bowman stated that the Magazine at Castle Pinckney was "...lined on the inside with wood."(22) Bowman provided further data on the Castle Pinckney lining in his response to Totten on May 22, 1839, stating that the magazine "...has been ceiled, but the ceiling has nearly all fallen, from the effect of moisture. The wood in all southern magazines which I have ever seen, mildews and decays." Bowman continued, relating his observations and thoughts on the problem of condensation in "southern" magazines.(23)

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20. Bowman to Totten, May 22, 1836
21. Bowman to Totten, Jn. 19, 1839
22. Bowman to Gratiot, Mr. 10, 1835
23. Bowman to Totten, My. 22, 1839

Totten finally responded to Bowman on November 9, 1840 wherein he relayed specific instructions for lining the Fort Moultrie Magazine (see Appendix). Bowman notified Totten on March 19, 1841 that "The Magazine is finished.[24] On June 2 of that year, following his inspection of the work, Totten suggested minor changes to Bowman, including "...cutting off the Magazine doors and raising the sills and floor of the entrance to the height of the floor within."[25]

Little work was done on the Magazine after 1841 except for slight repairs in 1855.[26]

At some point prior to 1859 the exterior walls of the Magazine had received a coat of lime stucco. In an estimate for repairs for the fort made October 14, 1859 the item of "...scraping masonry of the Magazine, repointing & grey washing..." was included.[27] The necessity for scraping the masonry indicates that there was a coating on the walls. Whether this coating was the stucco which is presently on the walls or whether it was an accumulation of the previous ochre-washes cannot yet be determined. Most of the stucco was removed in 1875.[28] (photo 26) The fact that the stucco was an afterthought is borne out by the brick pointing which can be seen today. (Photo 27)

Another construction feature not documented as to date of construction by primary sources is the Magazine Anteroom. Only the east wall and the

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24. Bowman to Totten, Mr. 19, 1841
25. Totten to Bowman, Jn. 2, 1841
26. Bearss, Fort Moultrie No. 3, pg. 90
27. Foster to DeRussy, Oct. 14, 1859
28. Bearss, Fort Moultrie No. 3, pg. 212

vault of this room remain today. The remaining walls have been removed or replaced by later work. (photo 28) The plan of the Magazine with the Anteroom as constructed is shown on a drawing which dates from 1875.[29] The fact that this work was completed earlier is attested by Gilmore's drawing of the Fort in 1869 where the Anteroom is indicated. (Plate___)

A search of all available records in hand fails to document the actual date of construction. Several clues, however, point to an 1860 date. All of the work completed in that year between August and December by Foster in anticipation of the Civil War, was constructed of 2-1/2 inch thick brick. All brick units for previous work dating back to 1808, were 3 inches thick. The present east wall of the Anteroom is of 2-1/2" brick, laid in a white lime mortar with coarse shell-aggregate. The other clue is Foster's letter to DeRussy of December 13, 1860 where he prefaces a list of the work he had accomplished over the previous three months by the statement: "The accessory defenses that I have created and am now perfecting are very important to the defense [of Fort Moultrie]...<u>They comprise, besides the works ordered by the Department</u>..."[30] Unfortunately those "works" were "ordered" verbally and no written record remains of them. A sketch plan drawn in the margin of a letter from Foster to Totten, January 21, 1861 shows the south front of the Magazine adjoining an extension of the North parade wall. Further, a photograph made April 16, 1861, three days after the bombardment of Fort Sumter, shows sand bags covering the

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29. Plate XL, Bearss, <u>Fort Moultrie 3</u>
30. Foster to DeRussy, Dec. 13, 1860

roof of the Anteroom. (Plate, CXXI, #3, Atlas to Accompany the Official Records of the Union and Confederate Armies, Plate 71-135c.) All of the foregoing points to a construction date of August - December 1860.

A precedent for the Anteroom and a clue as to its use and function can be found in Bowman's letter to Gratiot on March 10, 1835, conveying descriptions of both the Magazine at Fort Moultrie and that at Fort Pinckney. Of the latter he wrote: "The principal entrance to it is directly from the Parade but there is a small passage through the Pier between it and the adjoining Ordnance Store Room. During an attack the opening from the Parade should be firmly walled up and the necessary communication had through the Ordnance Store Room...The Ordnance Store room is bomb proof over head, but the closing wall next the parade is too thin to render it a perfectly safe place for depositing powder."(31)

It would appear that Foster received verbal orders in August 1860 to construct a similar "Ordnance Store Room" with a "bombproof over head" in front of the Fort Moultrie Magazine.(32) In so doing, the doorway to the Magazine heretofore protected only by a meager brick traverse and wood door, was given much greater protection.

3. 1860 - 1865 Period

This period brought great changes to Fort Moultrie. Prior to the advent of hostilities, work to prepare the Fort "...for a vigorous defense..." was completed and during the course of the war various addi-

31. Bowman to Gratiot, Mr. 10, 1835
32. Bearss .....

tional improvements were made.(33)

In September 1860, General Totten ordered Lieutenant Foster to undertake certain work which would place the Fort in battle condition.(34) Between that date and the Federal abandonment of Moultrie on December 26, 1860 the following work was completed:(35)

1) Sand dunes banked up against the seafronts were cut down and a permanent glacis built.
2) A shallow wet ditch fifteen feet wide was erected around the work on all sides save the north and was fronted with pickets.
3) Two flanking caponniers were erected at the southwest and southeast angles, respectively, complete with posterns into the Fort.
4) Sharp angles of the brick at the salient angles were cut off and repointed so as not to encourage escalade.
5) A bastionet for musketry was constructed at the salient of the Northwest Bastion.
6) East and West posterns were bricked up.
7) The projecting brick cordon was cut off.

Between January and April 1861 the South Carolina Troops who had occupied the Fort following its abandonment by Federal troops continued raising earth-works, large traverses and merlons.(36)

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33. Foster to [?], Dec. 27, 1860 (O.R. Series I, Vol. I, pp 5-6
34. Bearss, Fort Moultrie No. 3, p. 158
35. O. R. Series I, Vol. I, pp _____
36. Ibid, pg. ____

During the bombardment of Fort Sumter April 12-13, 1861, Fort Moultrie suffered little damage save for the Barracks and Officers' Quarters which were heavily shot up. (37)

Further changes were undertaken in response to Major General Gilmore's land thrust in August 1863 when parts of the damaged Officers' Quarters and the Barracks were taken down and new, larger traverses erected. It was at this time that "...the task of converting Fort Moultrie from a masonry work, vulnerable to the fire of heavy rifled guns, into a 'powerful earth work by banking sand against the scarp wall, and by the introduction of numerous traverses' was begun."(38)

Following the engagement with the Union monitors October 7-8, 1863, the remainder of the Officers' Quarters and the Barracks which were even more heavily damaged in the engagement, were completely razed.(39)

By 1868 Fort Moultrie was little changed from its war-time appearance. (Photos, Appendix) On January 31, 1868 Gillmore described it as follows:

> Fort Moultrie,was converted during the war into a massive earth-work, by covering with sand, inside and outside, all the masonry on the channel faces, and on the adjacent portions of the east and west faces as far as the posterns. On the exterior this mass of sand slopes down to the natural surface of the site, and on the interior terminates on the parade, where several bomb-proof shelters resting against the parade-wall have been constructed. On the terreplein are numerous traverses. The only portions of the scarp wall that could be seen are the gorge throughout its entire length, and the adjacent portions of the east and west faces as far as the posterns. Most of the

37. Bearss, Fort Moultrie No. 3, Pp. 166-167
38. Ibid., pp. 171-172
39. Ibid., pg. 174

parade wall can also be seen inside the bomb-proof shelters constructed against it. It does not appear to have been injured by the weight of sand over it, and in my judgement the scarp-wall will also be found intact, when uncovered.

The work will require extensive repairs, but I do not recommend the expenditure of any money upon it, until its thorough restoration can have been commenced. Neither the site nor any buildings pertaining to the work need any attention at the present time.(40)

The accuracy of this appearance is borne out by the drawings made by A. H. A. Becker in 1865 to accompany a report by Major C. R. Suter on the condition of the Fort. (Plate ____) Accurate in all regards save one, these drawings consisting of plans, sections and elevations when correlated with period photographs and written descriptions give us an accurate concept of the Civil War period Fort Moultrie.

The one glaring error in Becker's plan is the delineation of the old magazine in the northwest bastion. Becker's drawings show a rude timber-framed structure which never was. It would appear that the explanation for the error is that Becker or one of his draftsmen inadvertently substituted the plan of one of the other Charleston Harbor war time constructions for that of Moultrie.

4. The Period 1872 - 1876

Following the Civil War, America's fortification system was given close study for the purpose of determining physical and technical improvements to be made in response to the destructive power of the new larger rifled guns. It was finally determined that earth would replace masonry

40. Gillmore to Humphreys, Jan. 31, 1868

as the principal substance of fortification protection and by 1872 plans were well along to significantly transform Fort Moultrie's physical appearance.(41)

The new work was begun in 1872 and by its termination in 1876 various significant changes were made. (Plate ____ [1874-77 plans]) At the outset, everything within the scarp walls was systematically removed with the one exception of the old 1808 Storage Magazine in the Northwest Bastion. This work included the removal of the ruins of the Sally Port, the parade walls, the breast-height walls, parapets, tie-walls, counter-forts, cisterns, ramps and all of the earth and timber bombproofs erected during the Civil War. All that remained of the 1808 Fort Moultrie was the scarp wall and the old Storage Magazine.(42)

By 1876 the following work had been accomplished:

1) Six service magazines completed
2) New Principal Magazine completed
3) New Sally Port completed
4) East Bombproof completed
5) West Bombproof completed half way
6) Terrepleins and parapets completed
7) Scarp walls repaired, repointed and coped (brick on seafronts, artificial stone on north front)
8) New gun positions installed
9) Old Storage Magazine in Northwest Bastion altered.(43)

41. Bearss, Fort Moultrie No. 3, pp. 181-187
42. Ibid., pp. 189-193
43. Ibid., pp. 193-216

By the time Congressional appropriations ceased in 1876 the only remaining work to complete the modernization of Fort Moultrie consisted of:

1)	Raising and coping scarp	$ 1,450
2)	Completing Bombproof galleries	1,360
3)	Postern and cross galleries	993
4)	Side galleries in old magazine	120
5)	Floors	560
6)	Doors	1,290
7)	Lamp closets	120
8)	Sally Port stairs	300
9)	Drain into the cove	1,000
10)	Stone platforms and breast-height walls for 8 guns	25,025
11)	Platforms for 5 guns	250
12)	Sand filling for traverses (16,000 cu. yds.)	12,000
13)	Sand filling for face (10,000 cu. yd.)	7,500
14)	Sodding inside of Fort (10,000 sq. yd.)	10,000
15)	Sodding face (5,000 sq. yd.)	5,000
		$66,968
	Contingencies	16,742
	Total	$83,710 (44)

5. The Period 1877 - 1897

No significant physical changes were made to the fort during this twenty year period. Rather, it was a time of slow deterioration due to

44. Ibid., pg. 217

the meagerness of appropriated funds.

A significant action occurred during this period, however, which was to create a lasting change for the Fort. This action was the release of the Endicott Board's report in 1886 which drastically modified the concepts for United States' harbor defenses. One of the modifications called for was the installation of submarine mines to protect Charleston Harbor. The need for this minefield to be protected against penetration by destroyers and minesweepers necessitated light guns which could be pointed, loaded, and fired rapidly.(45) These changes were not instituted at Fort Moultrie, however, until the crisis of the Spanish-American War.

6. The Period 1898 - 1903

The outbreak of war with Spain in April 1898 caused significant changes in the appearance of Fort Moultrie as the findings of the Endicott Board were instituted. These changes consisted of the erection of three concrete gun batteries which replaced gun positions of the 1872-1876 period.

Battery Bingham was begun in April and completed by June 30, 1898. This emplacement consisted of two gun pits separated by an underground service magazine. A gallery was also built to connect the battery with the 1872-1876 Principal Magazine. The two Armstrong 4.7-inch rapid-fire guns were mounted in October and small additions made to the concrete work, including a six-inch thick apron, in November 1898.(46)

Battery McCorkle was commenced January 2, 1899 and was completed by

45. Ibid., pg. 241
46. Ibid., pp. 245-251

May of that year but the three Driggs-Seabury 15-pounders were not mounted until April 1901.(47)

Battery Lord was erected in 1903 and the two Driggs-Seabury 15-pounder rapid-fire guns were mounted in December of that year.(48)

All three batteries were coated with black asphaltic compounds.

6. The Period 1904-1944

(To await Ed. Bearss' report)

E. Description of Proposed Development

Fort Moultrie as it exists today is a melange of historic structures representing several historic periods. The total ensemble is a manifestation of the evolution of harbor defense fortifications in this country over a span of 135 years (1808-1943). Few sites exist today where this story is contained within the walls of one enclosed fortification.

Recognizing this significant aspect of Fort Moultrie, an interpretive plan has been developed utilizing a zone concept to make possible a time-capsulated visitor experience.(49) This interpretive approach was predicated on the knowledge of the impossibility of returning the fort to any given period of time, save the 20th century. The resulting interpretive plan was a compromise between two unacceptable alternatives.

The one alternative was to return the fort to a given period in

47. Ibid., pp. 251-255
48. Ibid., pp. 255-261
49. Interpretive Prospectus: Fort Sumter, June 1973.

time. The other was to leave it as it now stands and interpret it in its present state. To return the fort to any given period of time, did not seem to be a reasonable alternative in light of the amount of destruction and reconstruction that would be involved. To interpret the Fort in its present state did not make full use of the historic resource since key historic periods, to which visitors seek to relate, are missing. A compromise offered a resolution to the dilemma and the adaptive-use interpretive concept of the Interpretive prospectus was agreed to.

To make this plan work, the following construction activities will be required:

I. Removal

1) Remove Battery Lord, 1903

2) Remove gun emplacements 9, 10 and 11 of 1870's period

3) Remove granite gun emplacement 12 of 1870's period

4) Remove Service Magazine of 1870's period in Northwest Bastion

5) Remove West Postern walls and frontspiece of 1870's period

6) Remove concrete foundations of Position Finding Station

II. Reconstruction

1) Reconstruct gun position 7 and 8 to their date of construction: 1872 (utilizing appropriate elements of Nos. 9, 10 and 11 to be removed)

2) Reconstruct southwest seafront to the 1863-1865 Civil War period

3) Reconstruct West Postern to its 1808-1860 period.

4) Reconstruct the west and part of the north Parade wall to 1808-1860 period

5) Reconstruct parapets, terreplein, gun positions, etc. at salient of West Bastion to 1840-1860 period

III. Restoration

1) Restore west wall of Northwest Bastion to 1808 period

2) Restore old Storage Magazine, Northwest Bastion to 1808-1860 period

3) Restore all other historic structures within and including the scarp walls to the period of their construction.

F. Recommendations for Removal, Reconstruction and Restoration (including preliminary drawings.)

1) Remove Battery Lord: (50' X 100' including blast apron) Emplacement and blast apron are made of granite-aggregate concrete. Maximum thickness of emplacement is 12 feet; of blast apron, 1 foot.

Battery Lord has little historic significance. It was erected as an afterthought in 1903 and architecturally represents only slight modifications from Battery McCorkle. Core testing should be made to determine whether the emplacement can be broken up and removed by machinery (back-hoe) or whether blasting will be required. Measured drawings and record photographs should be made before removal.

2) Remove gun emplacements 9, 10 and 11:

Prior to removal these emplacements should be excavated and carefully measured and photographed. The iron and timber members should be carefully removed and preserved. If possible two of the concrete foundations (maximum thickness - 5 feet) should be removed intact for reuse in gun positions 7 and 8.

3) Remove gun position 12:

This position is the only one of the 1870's constructed of granite. This position should be removed after careful measurements and photographs and perhaps used for interpretive exhibit in another location.

4) Remove gun 12 Service Magazine:

(16' X 28', maximum thickness of concrete - 6 feet.) Although the argument here is perhaps strongest against the removal of historic fabric since this structure is in relatively good condition, it would be a significant intrusion in the proposed 1808-1840 scene. This Magazine is also similar in design to the other four service magazines and its loss would be thereby lessened.

Again, measured drawings and photographic documentation should be made as well as core testing as for Battery Lord.

5) Remove west Postern walls and frontspiece:

During the work of the 1870's the 1808 brick postern was removed and the present oyster shell-aggregate walls erected. The new postern walls were never completed above their present level nor did the postern ever function after this time.

6) Reconstruct gun positions 7 and 8 to their historic period-1872

These were among the first positions to be completed in the 1870's modernization of Fort Moultrie. Although destroyed for the construction of Battery Lord in 1903, sufficient details for this construction can be found on the drawing: Fort Moultrie, S. C., 1877 (NA, RG. 77, Dr. 65, Sht. 25). Section A B C D (Scale 1" = 10') bisects position No. 7. Also, further detail as well as pattern or salvage parts will be available from gun positions 9, 10 and 11

7) Reconstruct southwest seafront to 1863:

This reconstruction will exhibit the evolution of the fort and its armament during the short period of three years. It will consist of two heavy earth traverses and the emplacement of an 8 inch Brooke Rifle. Two photographs (1865) as well as Suter's drawing (1865) provide excellent detail for this reconstruction. The traverses will possibly be soil cement for maintenance purposes.

8) Reconstruct remainder of West and Northwest Bastions to period 1808 - 1840:

This would consist of reconstructing the parade wall, breast-height wall and terreplein. Adequate data for accurate reconstruction can be obtained from 1865 photographs, period drawings and reports and parts of the old walls enclosing the old Storage Magazine, Northwest Bastion.

9) Restore West Wall of Northwest Bastion to 1808 period:

This would consist of lowering the scarp wall and reconstructing embrasures, terreplein, coverline wall, and gun positions.

10) Restore old Storage Magazine, Northwest Bastion to 1808-1840 period:

This would consist of removing all post-1860 work including the earth cover, concrete roof, side gallery vaults and restoring the structure as a free standing building.

11) Restore remainder of Historic Structures:

APPENDIX